

WHAT IS CLAIMED IS:

1. An image forming apparatus comprising:

(A) a first substrate;

(B) a second substrate arranged in an opposing and spaced apart relation to said first substrate;

(C) a support frame having an inner periphery forming a substantially rectangular shape, said support frame being arranged between said first and second substrates, and surrounding a space between a principal surface of said first substrate and a principal surface of said second substrate, for maintaining said space in a depressurized condition;

(D) a plurality of electron emitting devices arranged on the principal surface of said first substrate facing said space;

(E) an image forming member having an outer periphery forming a substantially rectangular shape, said image forming member being arranged on at least a portion of the principal surface of said second substrate facing said space in an opposing relation to said plurality of electron emitting devices;

(F) a spacer disposed in said space for maintaining a separation between said first and second substrates; and

(G) a conductive film arranged on at least another portion

of the principal surface of said second substrate facing said space, said conductive film surrounding, and being spaced apart from, said image forming member, said conductive film being supplied with a potential lower than that applied to said image forming member,

said spacer having a length in the longitudinal direction thereof greater than that of said image forming member in the same longitudinal direction,

each longitudinal end of said spacer being arranged between the inner periphery of said support frame and a line through which passes an end of said conductive film positioned in a side-by-side opposing relation to the outer periphery of said image forming member, wherein the line is substantially perpendicular to the principal surface of said second substrate.

2. An image forming apparatus according to Claim 1, wherein said conductive film intersects a line between an arbitrary point on said image forming member and an arbitrary point on an outer periphery of the principal surface of said second substrate.

3. An image forming apparatus according to Claim 1, wherein said conductive film intersects a line between an arbitrary point on said image forming member and an

arbitrary point in a region in which said support frame is joined to said second substrate.

4. An image forming apparatus according to Claim 1, wherein said conductive film is in the form of a closed loop.

5. An image forming apparatus according to Claim 1, wherein said conductive film completely surrounds said image forming member.

6. An image forming apparatus according to Claim 1, wherein said spacer is formed of a flat plate.

7. An image forming apparatus according to any one of Claims 1 to 6, wherein said spacer has conductivity.

8. An image forming apparatus according to any one of Claims 1 to 6, wherein said spacer is fixed within said space by a bonding material provided in a region of said apparatus where said image forming member and said electron emitting devices are not arranged.

9. An image forming apparatus according to Claim 8, further comprising a support member, wherein said spacer is fixed through said support member onto one of a region of

said second substrate in which said image forming member is not arranged and a region of said first substrate in which said electron emitting devices are not arranged.

10. An image forming apparatus according to Claim 1, wherein said image forming member includes a phosphor film.

11. An image forming apparatus according to Claim 10, wherein said phosphor film includes phosphors which emanate light in three primary colors of red, blue and green.

12. An image forming apparatus according to Claim 10 or 11, wherein said phosphor film includes phosphors and a black member surrounding said phosphors.

13. An image forming apparatus according to Claim 12, wherein said image forming member further includes a conductive film covering said phosphor film.

14. An image forming apparatus according to Claim 12, wherein an outer periphery of said image forming member is demarcated by said black member.

15. An image forming apparatus according to Claim 13, wherein an outer periphery of said image forming member is

demarcated by said conductive film covering said phosphor film.

16. An image forming apparatus according to Claim 1, wherein a potential applied to said conductive film is substantially ground potential.

17. An image forming apparatus according to any one of Claims 1 to 6, 10, 11 and 16, wherein a potential applied to said conductive film is substantially the same as that applied to said electron emitting devices.

18. An image forming apparatus according to any one of Claims 1 to 6, 10, 11 and 16, wherein said electron emitting devices are connected via leads to a driving circuit arranged outside of said space maintained in a pressurized condition, and a potential applied to said leads by said driving circuit is substantially the same as that applied to said conductive film.

19. An image forming apparatus according to any one of Claims 1 to 6, 10, 11 and 16, further comprising a film having a higher resistance than that of said conductive film, wherein said conductive film and said image forming member are connected to each other through said film.

20. An image forming apparatus according to any one of Claims 1 to 6, 10, 11 and 16, wherein said conductive film is arranged near a portion of said image forming apparatus where said support frame is in contact with said face plate.

21. An image forming apparatus according to Claim 20, wherein said conductive film is a conductive bonding material.

22. An image forming apparatus comprising:

- (A) a first substrate;
- (B) a second substrate arranged in an opposing and spaced apart relation to said first substrate;
- (C) a support frame having an inner periphery forming a substantially rectangular shape, said support frame being arranged between said first and second substrates, and surrounding a space between a principal surface of said first substrate and a principal surface of said second substrate, for maintaining said space in a depressurized condition;
- (D) a plurality of electron emitting devices arranged on the principal surface of said first substrate facing said space;
- (E) an image forming member having an outer periphery

forming a substantially rectangular shape, said image forming member being arranged on at least a portion of the principal surface of said second substrate facing said space in an opposing relation to said plurality of electron emitting devices;

(F) a first conductive film arranged on at least another portion of the principal surface of said second substrate facing said space, said first conductive film surrounding, and being spaced apart from, said image forming member, said conductive film being supplied with a potential lower than that applied to said image forming member; and

(G) a second conductive film connecting said first conductive film to said image forming member.

23. An image forming apparatus according to Claim 22, wherein said second conductive film has a higher resistance than said first conductive film.

24. An image forming apparatus according to Claim 22, wherein said second conductive film has a sheet resistance of not less than  $10^7 \Omega/\square$ .

25. An image forming apparatus according to Claim 24, wherein said second conductive film has a sheet resistance of not more than  $10^{14} \Omega/\square$ .

26. An image forming apparatus according to any one of Claims 22 to 25, wherein said first conductive film intersects a line between an arbitrary point on said image forming member and an arbitrary point on an outer periphery of the principal surface of said second substrate.

27. An image forming apparatus according to any one of Claims 22 to 25, wherein said first conductive film intersects a line between an arbitrary point on said image forming member and an arbitrary point in a region of said apparatus where said support frame is in contact with said second substrate.

28. An image forming apparatus according to any one of Claims 22 to 25, wherein said first conductive film is in the form of a closed loop.

29. An image forming apparatus according to Claim 22, wherein said first conductive film surrounds said image forming member.

30. An image forming apparatus according to Claim 22, wherein said image forming member includes a phosphor film.



31. An image forming apparatus according to Claim 30, wherein said phosphor film includes phosphors which emanate light in three primary colors of red, blue and green.

32. An image forming apparatus according to Claim 30 or 31, wherein said phosphor film includes phosphors and a black member surrounding said phosphors.

33. An image forming apparatus according to Claim 32, wherein said image forming member further includes a conductive film covering said phosphor film.

34. An image forming apparatus according to Claim 32, wherein an outer periphery of said image forming member is demarcated by said black member, and said black member has conductivity.

35. An image forming apparatus according to Claim 33, wherein an outer periphery of said image forming member is demarcated by said conductive film covering said phosphor film.

36. An image forming apparatus according to any one of Claims 22 to 25, wherein a potential applied to said first conductive film is substantially ground potential.

37. An image forming apparatus according to any one of Claims 22 to 25, wherein a potential applied to said first conductive film is substantially the same as that applied to said electron emitting devices.

38. An image forming apparatus according to any one of Claims 22 to 25, wherein said electron emitting devices are connected via leads to a driving circuit arranged outside of said space maintained in a pressurized condition, and a potential applied to said leads by said driving circuit is substantially the same as that applied to said first conductive film.

39. An image forming apparatus according to any one of Claims 22 to 25, wherein the principal surface of said second substrate, which is positioned to face said space, is fully covered with a conductive member.

40. An image forming apparatus according to Claim 39, wherein said conductive member comprises said image forming member and said first and second conductive films.

41. An image forming apparatus according to any one of Claims 22 to 25, further comprising a spacer arranged in

said space for maintaining a separation between said first and second substrates.

42. An image forming apparatus according to any one of Claims 22 to 25, wherein said first conductive film is arranged in a portion of said apparatus where said support frame is in contact with said face plate.

43. An image forming apparatus according to Claim 42, wherein said first conductive film is a conductive bonding material.

44. An image forming apparatus comprising:

- (A) a first substrate;
- (B) a second substrate arranged in an opposing and spaced apart relation to said first substrate;
- (C) a support frame having an inner periphery, said support frame being arranged between said first and second substrates, and surrounding a space between a principal surface of said first substrate and a principal surface of said second substrate, for maintaining said space in a depressurized condition;
- (D) a plurality of electron emitting devices arranged on the principal surface of said first substrate facing said space;

(E) an image forming member having an outer periphery, said image forming member being arranged on at least a portion of the principal surface of said second substrate facing said space in an opposing relation to said plurality of electron emitting devices;

(F) a spacer disposed in said space for maintaining a separation between said first and second substrates; and

(G) a conductive film arranged on at least another portion of the principal surface of said second substrate facing said space, said conductive film surrounding, and being spaced apart from, said image forming member, said conductive film being supplied with a potential lower than that applied to said image forming member,

said spacer having a length in the longitudinal direction thereof greater than that of said image forming member in the same longitudinal direction,

each longitudinal end of said spacer being arranged between the inner periphery of said support frame and a line through which passes an end of said conductive film positioned in a side-by-side opposing relation to the outer periphery of said image forming member, wherein the line is substantially perpendicular to the principal surface of said second substrate.

45. An image forming apparatus comprising:

(A) a first substrate;

(B) a second substrate arranged in an opposing and spaced apart relation to said first substrate;

(C) a support frame having an inner periphery, said support frame being arranged between said first and second substrates, and surrounding a space between a principal surface of said first substrate and a principal surface of said second substrate, for maintaining said space in a depressurized condition;

(D) a plurality of electron emitting devices arranged on the principal surface of said first substrate facing said space;

(E) an image forming member having an outer periphery, said image forming member being arranged on at least a portion of the principal surface of said second substrate facing said space in an opposing relation to said plurality of electron emitting devices;

(F) a first conductive film arranged on at least another portion of the principal surface of said second substrate facing said space, said first conductive film surrounding, and being spaced apart from, said image forming member, said conductive film being supplied with a potential lower than that applied to said image forming member; and

(G) a second conductive film connecting said first conductive film to said image forming member.

46. An image forming apparatus comprising:

(A) a first substrate;

(B) a second substrate arranged in an opposing and spaced apart relation to said first substrate;

(C) a support frame having an inner periphery forming a substantially rectangular shape, said support frame being arranged between said first and second substrates, and surrounding a space between a principal surface of said first substrate and a principal surface of said second substrate, for maintaining said space in a depressurized condition;

(D) a plurality of electron emitting devices arranged on the principal surface of said first substrate facing said space;

(E) an image forming member having an outer periphery forming a substantially rectangular shape, said image forming member being arranged on at least a portion of the principal surface of said second substrate facing said space in an opposing relation to said plurality of electron emitting devices;

(F) a spacer disposed in said space for maintaining a separation between said first and second substrates; and

(G) a conductive film arranged on at least another portion of the principal surface of said second substrate facing

said space, said conductive film surrounding, and being spaced apart from, said image forming member, said conductive film being supplied with a potential lower than that applied to said image forming member,

said spacer having a length in the longitudinal direction thereof greater than that of said image forming member in the same longitudinal direction,

each longitudinal end of said spacer being arranged between the inner periphery of said support frame and a respective plane through which a corresponding end of said conductive film extends, wherein each respective plane extends substantially perpendicularly to the principal surface of said second substrate.